

IN THE CLAIMS

1. (Currently Amended) An electron-emitting device comprising:
 - (A) first and second electrodes disposed on an electrically-insulating substrate, wherein a gap is formed between said first and second electrodes;
 - (B) a first layer formed on said first electrode and having an oxide of Ti, an oxide of Zr, or an oxide of Nb on a surface thereof; and
 - (C) a fibrous carbon grown through a catalyst particle disposed on a sidewall surface of said first layer facing a side of said second electrode, so that said fibrous carbon does not connect said first electrode to said second electrode.
2. (Previously Presented) The electron-emitting device according to Claim 1, wherein only the sidewall surface of said first layer facing the side of said second electrode is exposed and other surfaces of said first layer are covered with a material on which a fibrous carbon does not grow as compared with said first layer.
3. (Previously Presented) The electron-emitting device according to Claim 2, wherein said material on which a fibrous carbon does not grow as compared with said first layer, is at least one of Ta, Cr, Au, Ag, Pt, and materials of a same kind as a material making said catalyst particle.
4. (Original) The electron-emitting device according to Claim 1,

wherein said fibrous carbon consists of a graphite nanofiber, a carbon nanotube, an amorphous carbon, or a mixture thereof.

5. (Currently Amended) The electron-emitting device according to Claim 1, wherein said fibrous carbon comprises ~~a graphen~~ graphenes.

6. (Currently Amended) The electron-emitting device according to Claim 1, wherein said fibrous carbon comprises a plurality of ~~graphens~~ graphenes.

7. (Currently Amended) The electron-emitting device according to Claim ~~[[6]]~~ 1, wherein said fibrous carbon has a plurality of ~~graphens~~ graphenes which are layered in an ~~stacked so as not to be parallel to an axis direction of said fibrous~~ each carbon fiber.

8. (Original) The electron-emitting device according to Claim 1, wherein said catalyst particle consists of Pd, Ni, Fe, Co, or an alloy thereof.

9. (Previously Presented) The electron-emitting device according to Claim 1, wherein an electron emission position from said fibrous carbon is more distant from a surface of said electrically-insulating substrate than a position of a surface of said second electrode.

10. (Currently Amended) The electron-emitting device according to Claim 1, wherein said second electrode and first electrode are formed ~~on a surface, having~~ into a substantially planar shape[[,]] on a surface of said substrate, [[and]] a thickness of said first electrode is larger than a thickness of said second electrode, and a voltage is applied between said first and second electrode so that said second electrode has a higher voltage than does said first electrode, thereby emitting an electron from said fibrous carbon.

11. (Currently Amended) The electron-emitting device according to Claim 1, wherein said electrically-insulating substrate is thicker in a region where said first electrode is formed than in a region where said second electrode is formed, and a voltage is applied between said first and second electrode so that said second electrode has a higher voltage than does said first electrode, thereby emitting an electron from said fibrous carbon.

12. (Previously Presented) The electron-emitting device according to Claim 1, wherein said first layer is formed from on said first electrode to inside of the gap between said second electrode and said first electrode on a surface of said electrically-insulating substrate.

13. (Currently Amended) An electron source comprising a plurality of

electron-emitting devices arrayed on an electrically-insulating substrate, each electron-emitting device comprising:

- (A) first and second electrodes disposed on the electrically-insulating substrate, wherein a gap is formed between said first and second electrodes;
- (B) a first layer formed on said first electrode and having an oxide of Ti, an oxide of Zr, or an oxide of Nb on a surface thereof; and
- (C) a fibrous carbon grown through a catalyst particle disposed on a sidewall surface of said first layer facing a side of said second electrode, so that said fibrous carbon does not connect said first electrode to said second electrode.

14. (Original) The electron source according to Claim 13, wherein said plurality of electron-emitting devices are electrically connected to a matrix wiring pattern.

15. (Previously Presented) An image-forming apparatus comprising:
the electron source according to Claim 13; and
an image-forming member for forming an image by collision of emitted electrons, disposed at a position where said image-forming member faces said electron source.

16. (Currently Amended) An electron-emitting device comprising:
(A) a first electrode and a second electrode placed in opposition

to each other, with a gap between said first and second electrodes, on a surface of a substrate; and

(B) a plurality of fibers electrically connected to said first electrode and comprising carbon,

wherein said fibers are placed on a surface of said first electrode facing said second electrode, so that said fibers do not connect said first electrode to said second electrode.

17. (Currently Amended) The electron-emitting device according to Claim 16, wherein each of said fibers comprising the carbon comprises a ~~graphen~~ graphene.

18. (Currently Amended) The electron-emitting device according to Claim 16, wherein each of said fibers comprising the carbon comprises a plurality of ~~graphens~~ graphenes.

19. (Currently Amended) The electron-emitting device according to Claim ~~[[18]]~~ 16, wherein each of said fibers comprises a plurality of ~~graphens~~ graphenes which are layered in an stacked so as not to be parallel to an axis direction of the at least one fiber comprising carbon each fiber.

20. (Previously Presented) The electron-emitting device according to Claim 16, wherein electrons are emitted by applying a voltage between said second electrode and said first electrode so that a potential of said second electrode is higher than that of said first electrode.

21. (Currently Amended) The electron-emitting device according to Claim [[16]] 20, wherein a height from the surface of said substrate to said fibers is larger than a height from the surface of said substrate to a surface of said second electrode.

22. (Currently Amended) The electron-emitting device according to Claim [[16]] 20, wherein a thickness of said first electrode is larger than a thickness of said second electrode.

23. (Original) The electron-emitting device according to Claim 16, wherein a first layer is placed between said first electrode and said fibers and said first layer comprises a Ti oxide, a Zr oxide, or an Nb oxide on a surface thereof.

24. (Previously Presented) The electron-emitting device according to Claim 23, wherein said fibers comprising carbon are fibers grown through a catalyst material placed on said first layer.

25. (Previously Presented) The electron-emitting device according to Claim 24, wherein said catalyst material is at least one of Pd, Ni, Fe, Co, or an alloy thereof.

26. (Original) The electron-emitting device according to Claim 23, wherein said first layer is electrically conductive.

27. (Previously Presented) The electron-emitting device according to Claim 23, wherein said first layer is covered by a second layer over surfaces other than a surface facing said second electrode, and said second layer consists of a material on which no substantial growth of fibers comprising carbon as a main component occurs as compared with said first layer.

28. (Previously Presented) The electron-emitting device according to Claim 23, wherein said first layer is covered by a second layer over surfaces other than a surface facing said second electrode, and said second layer consists of a material selected from Ta, Cr, Au, Ag, Pt, and materials of a same kind as a catalyst material.

29. (Currently Amended) An electron source comprising a plurality of electron-emitting devices arrayed on a substrate, each electron-emitting device comprising:

(A) a first electrode and a second electrode placed in opposition

to each other, with a gap between said first and second electrodes, on a surface of the substrate; and

(B) a plurality of fibers electrically connected to said first electrode and comprising carbon,

wherein said fibers are placed on a surface of said first electrode facing said second electrode, so that said fibers do not connect said first electrode to said second electrode.

30. (Canceled)

31. (Currently Amended) The electron source according to Claim 29, wherein each of said fibers comprising the carbon comprises a ~~graphen~~ graphene.

32. (Currently Amended) The electron source according to Claim 29, wherein each of said fibers comprising the carbon comprises a plurality of ~~graphens~~ graphenes.

33. (Currently Amended) The electron source according to Claim [[32]] 29, wherein each of said fibers has a plurality of graphens ~~graphenes which are layered in an stacked so as not to be parallel to an~~ axis direction of ~~the at least one each~~ fiber comprising carbon.

34. (Previously Presented) The electron source according to Claim 29, wherein electrons are emitted by applying a voltage between said second electrode and said first electrode so that a potential of said second electrode is higher than that of said first electrode.

35. (Currently Amended) The electron source according to Claim [[29]] 34, wherein a height from the surface of said substrate to said fibers is larger than a height from the surface of said substrate to a surface of said second electrode.

36. (Currently Amended) The electron source according to Claim [[29]] 34, wherein a thickness of said first electrode is larger than a thickness of said second electrode.

37. (Previously Presented) The electron source according to Claim 29, wherein a first layer is placed between said first electrode and said fibers and said first layer comprises a Ti oxide, a Zr oxide, or an Nb oxide on a surface thereof.

38. - 40. (Cancelled)

41. (Previously Presented) The electron source according to Claim 37, wherein said first layer is covered by a second layer over surfaces other than a surface

facing said second electrode, and said second layer consists of a material on which no substantial growth of fibers comprising carbon as a main component occurs as compared with said first layer.

42. (Cancelled)

43. (Currently Amended) An image-forming apparatus comprising:
the electron source according to any one of Claims 29, ~~and 31-42~~ 31, 37 and 41; and
a fluorescent member.

44. - 56. (Cancelled)

57. (New) An electron-emitting device comprising:

(A) a first electrode and a second electrode disposed on a surface of a substrate, with a gap disposed between said first and second electrodes; and

(B) a plurality of fibers electrically connected to a surface of said first electrode facing said second electrode,

wherein a height from the surface of said substrate to said fibers is larger than a height from the surface of said substrate to a top surface of said second electrode.

58. (New) The electron-emitting device according to claim 57, wherein the top surface of said second electrode is substantially parallel to the surface of said substrate.

59. (New) The electron-emitting device according to claim 58, wherein the top surface of said second electrode is substantially parallel to an interface between said second electrode and said substrate.

60. (New) The electron-emitting device according to any one of claims 57-59, wherein each of said fibers has a plurality of graphenes which are stacked so as not to be parallel to an axis direction of each fiber.

61. (New) An image display apparatus comprising a plurality of electron-emitting devices and a phosphor which emits light in response to being irradiating with electrons emitted from the electron-emitting devices, wherein each of the electron emitting devices is an electron emitting device as recited in any one of claims 57-59.